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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF

ROBERT KUHLMANN, ET AL.

SERIAL NO: 09/991,640

FILED: NOVEMBER 26, 2001

FOR: HIGH-STRUCTURE
PRECIPITATED SILICAS

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: EXAMINER: JOHNSON, E. M.

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: GROUP ART UNIT: 1754

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APPEAL BRIEF

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

This is an appeal of the Rejections made in the Office Action dated July 30, 2004 of Claims 1-17, at least one of which has been twice rejected. A Notice of Appeal is **submitted herewith**. (A previous Notice of Appeal, with applicable fee, was filed April 23, 2004.)

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Degussa AG having an address at Bennigsenplatz 1, D-40474 Dusseldorf, Germany.

II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' legal representative and the assignee are aware of no appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF THE CLAIMS

Claim 1-17 stand rejected and are herein appealed.

IV. STATUS OF THE AMENDMENTS

An amendment under 37 CFR 1.116 was timely filed on February 27, 2004. In accordance with the Office Action dated July 30, 2004, the amendment has been entered.

V. SUMMARY OF THE INVENTION

The present invention of Claim 1 is as follows:

A precipitated silica having the following physico-chemical characteristics:

pH (5% in water) (ISO 787-9)		3 - 8
BET surface area (DIN 66131)	(m ² /g)	400 - 600
DBP absorption value (DIN 53601, in relation to dried substance)	(g/100 g)	>380 - 420
Tapped density (ISO 787-11)	(g/l)	100 - 200
ALPINE sieve residue > 63μ (ISO 8130-1)	(%)	0.1 - 40

See the table at the bottom of page 2 of the specification, and the specification at page 3, line 3.

VI. ISSUES

(A) Whether Claims 1-14 and 17 are unpatentable under 35 U.S.C. § 103(a) over U.S. 4,495,167 (Nauroth et al)?

(B) Whether Claim 15-16 are anticipated under 35 U.S.C. § 102(b) by, or unpatentable under 35 U.S.C. § 103(a) over, Nauroth et al?

(C) Whether Claim 1-4 and 10-17 are unpatentable under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement?

VII. GROUPING OF THE CLAIMS

For Issue (A), each of Claims 10, 11, 13 and 14 stands or falls separately from Claim 1. Claim 5 stands or falls separately from Claim 1.

For Issue (B), each of Claims 15 and 16 stands or falls separately from Claim 1.

VIII. ARGUMENT

Issue (A)

Claims 1-14 and 17 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Nauroth et al. That rejection is untenable and should not be sustained.

As confirmed by Reference Example 1 herein, described in the specification at pages 6-7, the DBP absorption value reported in Nauroth et al for their Example 1 is incorrect. As confirmed in Reference Example 1, the DBP absorption value of Nauroth et al's Example 1 is

only 355 g/100 g. Indeed, Appellants respectfully submit that to the best of their knowledge a DBP absorption value of at least 380 g/100 g cannot be obtained by the process disclosed in Nauroth et al.

The table below tabulates the times of the steps in Nauroth et al's Example 1 and Example 1 according to the present invention:

	Invention	Nauroth
adding waterglass and sulfuric acid together	13 min	13 min
interrupting the precipitation	90 min	90 min
adding waterglass and sulfuric acid together	34 min	43 min
total precipitation time	137 min	146 min
final silica concentration	40 g/l	46 g/l

As the table shows, the second precipitation step for the example of the present invention was shortened about 21% from Nauroth et al, resulting in a shorter overall precipitation time and about 13% overall lower silica concentration. These modifications assure DBP absorption value of at least 380 g/100 g, which is neither disclosed nor suggested by Nauroth et al.

In the present Office Action, the Examiner finds that while Nauroth et al discloses DBP absorption values of up to 380, but not greater than 380, it would have been obvious to one of ordinary skill in the art to "include at least some infinitesimal values above 380 with a reasonable expectation of achieving a similarly favorable result as that within the disclosed range."

In reply, and as discussed above, the disclosure in Nauroth et al does not enable one of ordinary skill in the art how to obtain a DBP absorption value of as high as 380. Moreover, there is no disclosed or suggested motivation to prepare a precipitated silica

having a DBP absorption value of even infinitesimally greater than 380, but even if there was such motivation, Nauroth et al does not disclose how to do so.

Regarding Claim 5 and claims dependent thereon, the Examiner acknowledges that Nauroth et al does not disclose a solids content of 36-42 g/l, but finds, nevertheless, that such a solids content would have been obvious, in view of Nauroth et al's disclosure of 46 g/l.

In reply, Nauroth et al discloses no recognition of any significance of their solids content of 46 g/l, nor does Nauroth et al disclose any other solids content or range thereof. While Claims 4, 7 and 10 thereof recite "about 46 g/l", no definition of the breadth of the term "about" is provided in the disclosure. In addition, Nauroth et al does not disclose, even if there was motivation, how to produce a final silica concentration of 36-42 g/l.

Claim 10 is separately patentable because Nauroth et al neither discloses nor suggests their precipitated silica with nutritive feed components.

Claim 11 is separately patentable because Nauroth et al neither discloses nor suggests their precipitated silica combined with vitamin components.

Claim 13 is separately patentable because Nauroth et al neither discloses nor suggests their precipitated silica as a free-flow or anti-caking agent for formulating a free-flowing composition.

Claim 14 is separately patentable because Nauroth et al neither discloses nor suggests their precipitated silica for combining with a liquid to convert the liquid into a powder. Nauroth et al's disclosure of their precipitated silica as a thickening silica does not suggest this subject matter.

For all the above reasons, it is respectfully requested that the above rejection be REVERSED.

Issue (B)

Claims 15 and 16 stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as unpatentable over, Nauroth et al. That rejection is untenable and should not be sustained.

Claim 15 is patentable since the claimed powder necessarily requires the use of the precipitated silica of Claim 1, which is clearly not described in Nauroth et al., nor otherwise suggested by Nauroth et al., for reasons discussed above with regard to Issue (A).

Claim 16 is patentable since Nauroth et al. discloses and suggests nothing about elastomers, let alone an elastomer with their precipitated silica. Polypropylene and polyethylene films disclosed by Nauroth et al. are not necessarily elastomers.

Nor is it clear how the subject matter of Claims 15 and 16 can be anticipated by Nauroth et al., when the Examiner has not found that the underlying precipitated silica required therein is anticipated.

For all the above reasons, it is respectfully requested that the above rejection be REVERSED.

Issue (C)

Claims 1-4 and 10-17 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to satisfy the description requirement. That rejection is untenable and should not be sustained.

The Examiner finds that the claims are inclusive of a DBP absorption value of greater than 420 g/100 g.

In reply, it is clear that all the claims subject to this rejection recite DBP absorption value of greater than 380 and up to and including 420. It appears that the Examiner may be interpreting the term ">380 – 420" as meaning greater than a range of 380 – 420. If that is the Examiner's interpretation, it is incongruous, because if Appellants wished to recite the DBP absorption value as open-ended at the high end, they would have recited simply ">380."

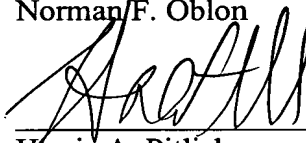
For all the above reasons, it is respectfully requested that the above rejection be REVERSED.

IX. CONCLUSION

For the above reasons, it is respectfully requested that all the rejections still pending in the Office Action be REVERSED.

Respectfully submitted,

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APPENDIX

CLAIMS ON APPEAL

Claim 1: A precipitated silica having the following physico-chemical characteristics:

pH (5% in water) (ISO 787-9)		3 – 8
BET surface area (DIN 66131)	(m ² /g)	400 – 600
DBP absorption value (DIN 53601, in relation to dried substance)	(g/100 g)	>380 – 420
Tapped density (ISO 787-11)	(g/l)	100 – 200
ALPINE sieve residue > 63μ (ISO 8130-1)	(%)	0.1 - 40

Claim 2: The precipitated silica according to Claim 1, which has the following physico-chemical characteristics:

pH (5% in water) (ISO 787-9)		3 – 8
BET surface area (DIN 66131)	(m ² /g)	400 – 600
DBP absorption value (DIN 53601, in relation to dried substance)	(g/100 g)	>380 – 420
Tapped density (ISO 787-11)	(g/l)	140 – 200
ALPINE sieve residue > 63μ (ISO 8130-1)	(%)	10 - 40

Claim 3: The precipitated silica according to Claim 1, which has the following physico-chemical characteristics:

pH (5% in water) (ISO 787-9)		3 – 8
BET surface area (DIN 66131)	(m ² /g)	400 – 600
DBP absorption value (DIN 53601, in relation to dried substance)	(g/100 g)	>380 – 420
Tapped density (ISO 787-11)	(g/l)	140 – 180
ALPINE sieve residue > 63μ (ISO 8130-1)	(%)	1 - 10

Claim 4: The precipitated silica according to Claim 1, which has the following physico-chemical characteristics:

pH (5% in water) (ISO 787-9)		3 – 8
BET surface area (DIN 66131)	(m ² /g)	400 – 600
DBP absorption value (DIN 53601, in relation to dried substance)	(g/100g)	>380 – 420
Tapped density (ISO 787-11)	(g/l)	100 – 130
ALPINE sieve residue > 63μ (ISO 8130-1)	(%)	0.1 - 1

Claim 5: A process for manufacturing a precipitated silica, which comprises:

while stirring water in a vessel with a force sufficient to subject the medium to shear containing water heated to 35°C to 45°C,

a) adding water and sulfuric acid together within at least 100 minutes, to the vessel and maintaining a pH of 6–7, wherein the addition of substances is interrupted for 60 to 120 minutes and when the addition of the substances to the vessel has been completed, a solids content of 36 to 42 g/l remains; and

b) filtering the solid matter, washing the filter cake and subjecting the solid material to a short retention drying process,

wherein the precipitated silica has the following physico-chemical characteristics:

pH (5% in water) (ISO 787-9)		3 – 8
BET surface area (DIN 66131)	(m ² /g)	400 – 600
DBP absorption value (DIN 53601, in relation to dried substance)	(g/100 g)	380 – 420
Tapped density (ISO 787-11)	(g/l)	100 – 200
ALPINE sieve residue > 63μ (ISO 8130-1)	(%)	0.1 – 40

Claim 6: The process according to Claim 5, which further comprises conducting a short retention time drying process (c) by liquefying the filter cake to a solids content of less than 18% by weight and spray-drying the resulting suspension.

Claim 7: The process according to Claim 6, wherein the short retention time drying process in (c) is conducted by drying the filter cake with a spin flash dryer.

Claim 8: The process according to Claim 6, wherein the silica obtained after the short retention drying process is adjusted to pH 7 to 8 with ammonia gas.

Claim 9: The process according to Claim 6, wherein the filter cake is washed with diluted sulfuric acid.

Claim 10: A method of formulating an animal feed, comprising:
combining nutritive feed components of the animal feed with the precipitated silica of Claim 1 as a carrier.

Claim 11: A method of formulating a vitamin formulation, comprising:
combining vitamin components of the vitamin formulation with the precipitated silica of Claim 1 as a carrier.

Claim 12: A method of formulating a catalyst, comprising:
combining components of the catalyst with the precipitated silica of Claim 1 as a carrier for catalytically active components of the catalyst.

Claim 13: A method of formulating a free-flowing composition, comprising:
formulating ingredients of the composition with the precipitated silica of Claim 1 which functions as a free-flow or anti-caking agent.

Claim 14: A method of converting a liquid into powder form, comprising:
combining said liquid with the precipitated silica of Claim 1 as an auxiliary thereby converting the liquid into powder.

Claim 15: The powder prepared by the method of Claim 14.

Claim 16: An elastomer containing mixture prepared by combining an elastomer with the precipitated silica of Claim 1.

Claim 17: A method of manufacturing a catalyst carrier, comprising:
combining components of the catalyst carrier with the precipitated silica according to Claim 1.